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PATENT  
IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

IN RE APPLICATION: Usama Fayyad et al.

Serial No. 09/700,606

Filed: January 31, 2001

Title: SCALABLE SYSTEM FOR CLUSTERING OF LARGE DATABASES HAVING MIXED ATTRIBUTES

Docket No. 14-694 - 4254

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Technology Center 2100

WATTS, HOFFMANN, FISHER  
& HEINKE, CO., L.P.A.  
1100 Superior Avenue, Ste. 1750  
Cleveland, Ohio 44114

Assistant Commissioner for Patents  
Office of Initial Patent Examination's  
Customer Service Center  
Washington, D.C. 20231

REQUEST FOR CORRECTED FILING RECEIPT

Sir:

As evidenced by the enclosed copy of page one of the specification, specifically, the first two paragraphs which have been highlighted for your convenience, and the enclosed copy of the Declaration and Power of Attorney, the correct domestic priority data as claimed by applicant should read as follows:

THIS APPLICATION IS A 371 OF PCT/US99/06717 03/29/1999

WHICH IS A CIP OF 09/083,906 05/22/1998

WHICH CLAIMS BENEFIT OF 60/086,410 05/22/1998

I hereby certify that the paper is being deposited with the U.S. Postal Service as 1st Class Mail addressed to the Assistant Commissioner of Patents, Washington, D.C. 20231

DO

EX

BEST AVAILABLE COPY

A copy of the original filing receipt is enclosed which shows the necessary corrections. A corrected filing receipt is respectfully requested.

Respectfully submitted,

Date: June 1, 2001

Telephone: 216-241-6700  
Facsimile: 216-241-8151

Stephen S. Schultz  
Stephen S. Schultz  
Reg. No. 29,108



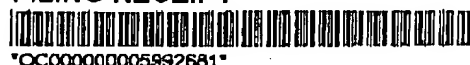
## UNITED STATES PATENT AND TRADEMARK OFFICE

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UNITED STATES PATENT AND TRADEMARK OFFICE  
WASHINGTON, D.C. 20231  
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APPLICATION NUMBER	FILING DATE	GRP ART UNIT	FIL FEE REC'D	ATTY. DOCKET NO.	DRAWINGS	TOT CLAIMS	IND CLAIMS
09/700,606	01/31/2001	2121	1152	14-694-4254	8	34	4

CONFIRMATION NO. 8142

## FILING RECEIPT



\*OC000000005992681\*

Watts Hoffman Fisher & Heinke Company  
Suite 1750  
1100 Superior Avenue  
Cleveland, OH 44114-2518

APR 27 2001

Date Mailed: 04/24/2001

Receipt is acknowledged of this nonprovisional Patent Application. It will be considered in its order and you will be notified as to the results of the examination. Be sure to provide the U.S. APPLICATION NUMBER, FILING DATE, NAME OF APPLICANT, and TITLE OF INVENTION when inquiring about this application. Fees transmitted by check or draft are subject to collection. Please verify the accuracy of the data presented on this receipt. If an error is noted on this Filing Receipt, please write to the Office of Initial Patent Examination's Customer Service Center. Please provide a copy of this Filing Receipt with the changes noted thereon. If you received a "Notice to File Missing Parts" for this application, please submit any corrections to this Filing Receipt with your reply to the Notice. When the PTO processes the reply to the Notice, the PTO will generate another Filing Receipt incorporating the requested corrections (if appropriate).

## Applicant(s)

Usama Fayyad, Mercer Island, WA;  
Paul S. Bradley, Seattle, WA;  
Cory A. Reina, Kirkland, WA;

## Domestic Priority data as claimed by applicant

THIS APPLICATION IS A 371 OF PCT/US99/06717 03/29/1999 ✓  
WHICH IS A CIP OF 60/083,906 05/01/1998  
WHICH CLAIMS BENEFIT OF 60/086,410 05/22/1998

## Foreign Applications

Projected Publication Date: N/A

Non-Publication Request: No

Early Publication Request: No

## Title

Scalable system for clustering of large databases having mixed data attributes



## A Scalable System for Clustering of Large Databases Having Mixed Data Attributes

### Cross Reference to Related Applications

5 The present invention is a continuation in part of co-pending United States patent application serial number 09/083,906 entitled "A Scalable System for Expectation Maximization Clustering of Large Databases" to Fayyad et al having a filing date of May 22, 1998, and which is assigned to the assignee of the present application and is incorporated herein by reference.

10 Priority is claimed from provisional United States patent application serial number 60/086,410 filed May 22, 1998.

### Field of the Invention

15 The present invention concerns database analysis and more particularly concerns an apparatus and method for clustering of data into groups that capture important regularities and characteristics of the data.

### Background Art

20 Large data sets are now commonly used in most business organizations. In fact, so much data has been gathered that asking even a simple question about the data has become a challenge. The modern information revolution is creating huge data stores which, instead of offering increased productivity and new opportunities, can overwhelm the users with a flood of information. Tapping into large databases for even simple browsing can result in a return of irrelevant and unimportant facts. Even people who do not 'own' large databases face the overload problem when accessing  
25 databases on the Internet. A large challenge now facing the database community is how to sift through these databases to find useful information.

Existing database management systems (DBMS) perform the steps of reliably storing data and retrieving the data using a data access language, typically SQL. One major use of database technology is to help individuals and organizations make  
30 decisions and generate reports based on the data contained in the database.

An important class of problems in the areas of *decision support* and *reporting* are clustering (segmentation) problems where one is interested in finding groupings (clusters) in the data. Data clustering has been used in statistics, pattern recognition,

Attorney's Docket No. 14-694Patent**DECLARATION AND POWER OF ATTORNEY FOR PATENT APPLICATION**

As a below-named inventor, I hereby declare that:

My residence, post office address, and citizenship are as stated below next to my name.

I believe I am the original, first and sole inventor (if only one name is listed below) or an original, first and joint inventor (if plural names are listed below) of the subject matter which is claimed and for which a patent is sought on the invention entitled:

**A SCALABLE SYSTEM FOR CLUSTERING OF LARGE DATABASES MIXED DATA ATTRIBUTES**

the specification of which:

\_\_\_\_\_ is attached hereto.  
 \_\_\_\_\_ was filed on \_\_\_\_\_ as United States Patent Application Number \_\_\_\_\_ and was amended on \_\_\_\_\_ (if applicable).  
X \_\_\_\_\_ was filed on March 29, 1999 as PCT International Application Number PCT/US99/06717.

I have reviewed and understand the contents of the above-identified specification, including the claims, as amended by any amendment referred to above.

I acknowledge the duty to disclose to the United States Patent and Trademark Office information known to me to be material to patentability as defined in Title 37, Code of Federal Regulations, § 1.56. Under that section, information is material to patentability when it is not cumulative to information already of record or being made of record in the application, and (1) it establishes, by itself or in combination with other information, a prima facie case of unpatentability of a claim; or (2) it refutes, or is inconsistent with, a position the applicant takes in: (i) opposing an argument of unpatentability relied on by the United States Patent and Trademark Office, or (ii) asserting an argument of patentability.

I hereby claim foreign priority benefits under Title 35, United States Code, § 119(a)-(d) or § 365(b) of any foreign application(s) for patent or inventor's certificate, or § 365(a) of any PCT international application(s) which designated at least one country other than the United States, listed below. I have also identified below any corresponding foreign application(s) for patent or inventor's certificate or any corresponding PCT international application(s) having a filing date before that of the application(s) on which priority is claimed.

**Prior Foreign Application(s)**

Number	Country	Filing Date (mm/dd/yyyy)	Priority Claimed (Yes or No)
PCT/US99/06717	PCT	29 March 1999	Yes

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 Assistant Commissioner for Patents, Washington, D.C. 20231

[Page 1 of 3]

on

by

11/15/00  
Wesley Burgess

I hereby claim the benefit under Title 35, United States Code, § 119(e) of any United States provisional application(s) listed below:

United States Provisional Application(s)

Application Number	Filing Date (mm/dd/yyyy)
60/086,410	May 22, 1998

I hereby claim the benefit under Title 35, United States Code, § 120 of any United States application(s) or § 365(c) of any PCT international application(s) designating the United States, listed below. Insofar as the subject matter of each of the claims of this application is not disclosed in the prior United States or PCT international application(s) in the manner provided by the first paragraph of Title 35, United States Code, § 112, I acknowledge the duty to disclose to the United States Patent and Trademark Office information known to me to be material to patentability as defined in Title 37, Code of Federal Regulations, § 1.56 which became available between the filing date of the prior application(s) and the national or PCT international filing date of this application.

United States Application(s) Upon Which Priority is Claimed

Application Number	Filing Date (mm/dd/yyyy)	Status (abandoned, pending, patent number)
09/083,906	May 22, 1998	Pending

I hereby appoint the following attorney(s) and/or agent(s), all of whom are associated with Watts, Hoffmann, Fisher & Heinke Co., L.P.A., having offices at 1100 Superior Avenue East, Suite 1750, Cleveland, Ohio 44114-2518, to prosecute this application and to transact all business in the United States Patent and Trademark Office connected therewith:

Thomas E. Fisher, Reg. No. 18,271  
 Stephen J. Schultz, Reg. No. 29,108  
 Lowell L. Heinke, Reg. No. 19,471  
 John R. Hlavka, Reg. No. 29,076  
 George L. Pinchak, Jr., Reg. No. 37,697

Linn J. Raney, Reg. No. 23,078  
 Paul A. Serbinowski, Reg. No. 34,429  
 Richard A. Sharpe, Reg. No. 34,722  
 James G. Watterson, Reg. No. 20,180  
 Peter R. Hagerty, Reg. No. 42,618  
 Kenneth J. Smith, Reg. No. 45,115

and the following attorney(s), all of whom are associated with Microsoft Corporation having an address of One Microsoft Way, Redmond, Washington 98052-6399;

Daniel D. Crouse, Reg. No. 32,022

Katie E. Sako, Reg. No. 32,628

to prosecute this application and to transact all business in the United States Patent and Trademark Office connected therewith, and I hereby designate the foregoing Stephen J. Schultz, Reg. No. 29,108, principal attorney.

This appointment shall include all power to prosecute and transact all business relating to all applications corresponding to this application in all countries, including all regional and international patent offices, such as, but not limited to, the European Patent Office and all offices and bureaus established in accordance with the Patent Cooperation Treaty.

I hereby further designate and appoint any officer of Watts, Hoffmann, Fisher & Heinke Co., L.P.A. my attorney in fact with full power of substitution and revocation, including power to designate a substitute principal attorney.

Address all correspondence to:

WATTS, HOFFMANN, FISHER & HEINKE CO., L.P.A.  
1100 Superior Ave., Ste. 1750  
Cleveland, Ohio 44114-2518

Direct all telephone calls to Stephen J. Schultz at (216) 241-6700 and direct all facsimile correspondence to (216) 241-8151.

I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under § 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of this application or any patent issued thereon.

Full Name of Sole or First Joint Inventor: <b>Usama Fayyad</b>	
Inventor's Signature:	Date:
Residence: <b>Mercer Island, Washington</b>	Citizenship: <b>United States of America</b>
Post Office Address: <b>9705 SE 43<sup>rd</sup> Street, Mercer Island, WA 98040</b>	

Full Name of Second Joint Inventor: <b>Paul S. Bradley</b>	
Inventor's Signature:	Date:
Residence: <b>Seattle, Washington</b>	Citizenship: <b>United States of America</b>
Post Office Address: <b>600 Lake Washington Blvd., East, Apt #C, Seattle, WA 98112</b>	

Full Name of Third Joint Inventor: <b>Cory A. Reina</b>	
Inventor's Signature:	Date:
Residence: <b>Kirkland, Washington</b>	Citizenship: <b>United States of America</b>
Post Office Address: <b>12107 86<sup>th</sup> Avenue, NE, Kirkland, WA 98034</b>	



## PATENT

**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE**  
**PATENT DIVISION**

In re PATENT APPLICATION of:                   USAMA FAYYAD ET AL.

Serial No.:                   09/700,606                   Examiner:           not yet assigned

Filed:                        11/15/00                   Art Unit:           not yet assigned

Docket:                     14-694 - 4254

Title:                        **A SCALABLE SYSTEM FOR CLUSTERING OF LARGE  
DATABASES MIXED DATA ATTRIBUTES**

Watts, Hoffmann, Fisher  
& Heinke Co., L.P.A.  
1100 Superior Ave., Ste. 1750  
Cleveland, Ohio 44114

Commissioner for Patents and Trademarks  
Attn: Finance Dept., Refund Section  
P.O. Box 16  
Washington, D.C. 20231

**REQUEST FOR REFUND**

Dear Sir:

On the February 2001 deposit account statement for account number 23-0630, we noted numerous charges and credits for this application.

This application is based on a previously filed PCT application. When the national phase U.S. application was filed, a check was sent to the U.S. Patent and Trademark Office that was received on November 15, 2000 in the amount of \$1,002 for the application filing fee. A copy of the check and return postcard is enclosed. This application was filed without a signed declaration. On January 31, 2001 the U.S. Patent and Trademark Office received two checks in the amounts of \$110 and \$130 for filing a Petition for a one month extension of time and for filing the missing Declaration and Power of Attorney from the original filing.

The February 2001 deposit account statement contained two credits, one for \$1046 and one for \$110. Applicant's attorney does not believe that they are entitled to these credits since the filing fee and extension fee was submitted to the PTO unless our deposit account was erroneously charged for these amounts in a previous statement. Also, applicant's attorney respectfully requests an explanation of the inconsistency in the filing fee amount which was sent in to the PTO (\$1002) and the amount credited to our deposit account (\$1046).

The February 2001 deposit account statement also had one charge for \$130 with the fee code number of 154 which stands for a charge for submitting an Oath or Declaration after the twenty or thirty months from priority date. This second charge should be refunded to deposit account number 23-0630 since a \$130 check was submitted and received by the PTO on January 31, 2001.

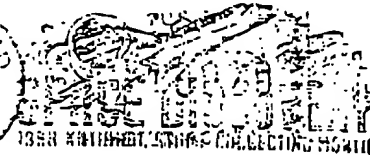
Respectfully submitted,

Date March 28, 2001

Stephen Schultz  
Stephen J. Schultz  
Reg. No. 29,108

Phone: (216)623-0775

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PATENT APPLICATION

Attorney Docket No. 14-694

Client: 4257

Applicant(s) Danypad et al.

Title: Image Based System

Serial No. 091100406

Filed: 11/15/00

Patent No.:

Mailing Date: 1/23/01

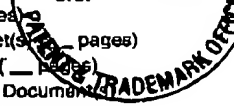
Initials: SKB

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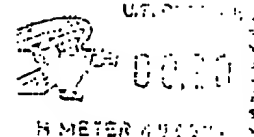
- ☐ Transmittal ( \_\_\_ pages)
- ☐ Provisional Application for Patent Cover Sheet
- ☐ Request for Filing a Patent Application under 37 CFR 1.60 ( \_\_\_ pages)
- ☐ Request for Filing a Patent Application under 37 CFR 1.62 ( \_\_\_ pages)
- ☐ Patent Application ( \_\_\_ total pages)
- ☐ Provisional, ☐ New Nonprovisional, ☐ Continuation, ☐ Divisional, ☐ CIP, ☐ PCT, ☐ \_\_\_ cover page
- ☐ \_\_\_ pages of specification
- ☐ \_\_\_ pages of \_\_\_ number of claims
- ☐ \_\_\_ pages of abstract
- ☐ Drawings ( \_\_\_ sheets)
- ☒ Declaration(s) with Power of Attorney ( \_\_\_ pages)
- ☒ Check(s) in Amount of \$ 110-  
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- ☐ Assignment(s) ( \_\_\_ pages)
- ☐ Assignment Cover Sheet(s) ( \_\_\_ pages)
- ☐ Small Entity Statement ( \_\_\_ pages)
- ☐ \_\_\_ Number of Priority Documents
- ☒ Response to Notice to File Missing Parts ( \_\_\_ pages)
- ☒ Copy of Notice to File Missing Parts Form PTO-1533
- ☐ Information Disclosure Statement ( \_\_\_ pages)
- ☐ PTO Form 1449 ( \_\_\_ pages)
- ☐ \_\_\_ Number of Documents
- ☒ Petition for a \_\_\_ Month Extension of Time 2 Pgs
- ☐ Preliminary Amendment ( \_\_\_ pages)
- ☐ Amendment ( \_\_\_ pages)
- ☐ Notice of Appeal ( \_\_\_ pages)
- ☐ Appeal Brief in Triplicate ( \_\_\_ pages each)
- ☐ Issue Fee Transmittal PTOL-85B & Copy
- ☐ Maintenance Fee Transmittal ( \_\_\_ pages)

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WATTS, HOFFMANN, FISHER  
& HEINKE CO., L.P.A.  
SUITE 1750  
1100 SUPERIOR AVENUE  
CLEVELAND, OHIO 44114-2518

## PATENT APPLICATION

Applicant(s): Watts, Hoffmann, Fisher & HeinkeTitle: Variable System in Distribution

Serial No.: \_\_\_\_\_

Mailing Date: 11/15/00, Filed: \_\_\_\_\_

Receipt is hereby acknowledged of the following:

☒ Transmittal (4 pages)☐ Provisional Application for Patent Cover Sheet☐ Request for Filing a Patent Application under 37 CFR 1.60 (\_\_\_\_ pages)☐ Request for Filing a Patent Application under 37 CFR 1.62 (\_\_\_\_ pages)☒ Patent Application (\_\_\_\_ total pages)☐ Provisional, ☒ New Nonprovisional, ☐ Continuation, ☐ Divisional, ☐ CIP, ☐ PCT, ☐ \_\_\_\_\_33 cover page33 pages of specification39 pages of 39 number of claims1 pages of abstract☒ Drawings (8 sheets)☒ Declaration(s) with Power of Attorney (2 pages) unexecuted☒ Check(s) in Amount of \$ 1,000Attorney Docket No.: 14-674Client: 70234

Patent No.: \_\_\_\_\_

☐ Assignment(s) (\_\_\_\_ pages)☐ Assignment Cover Sheet(s) (\_\_\_\_ pages)☐ Small Entity Statement (\_\_\_\_ pages)☐ \_\_\_\_\_ Number of Priority Document(s)☐ Response to Notice to File Missing Parts (\_\_\_\_ pages)☐ Copy of Notice to File Missing Parts Form PTO-1539☐ Information Disclosure Statement (\_\_\_\_ pages)☐ PTO Form 1449 (\_\_\_\_ pages)☐ \_\_\_\_\_ Number of Documents☐ Petition for a \_\_\_\_\_ Month Extension of Time☐ Preliminary Amendment (\_\_\_\_ pages)☐ Amendment (\_\_\_\_ pages)☐ Notice of Appeal (\_\_\_\_ pages)☐ Appeal Brief in Triplicate (\_\_\_\_ pages each)☐ Issue Fee Transmittal PTOL-85B & Copy☐ Maintenance Fee Transmittal (\_\_\_\_ pages)

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1. *Journal of the American Medical Association*, 1997; 277: 1033-1038.

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January 25, 2001

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*Stephen Schultz*  
AUTHORIZED SIGNATURE

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P. 16

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& HEINKE CO., L.P.A.  
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CLEVELAND, OH 44114-2518

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1/25/01

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